Critical Digest.

ANATOMICAL, PHYSIOLOGICAL AND PATHOLOGICAL NOTES.

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"On the Changes in the Spinal Cord after Amputation."

Dr. Emil Redlich (Centralblatt für Nervenheilkunde und Psychiatrie, January, 1893, N. F. III., Band. XVI., Jahrgang).

It is a question of very considerable interest to determine in how far the facts agree with the dogmatic statement, that in the nervous system, section of a nerve fibre leads to changes of that portion only which is separated from its nutritive centre.

There are, of course, two processes which may be fairly distinguished, viz., active degeneration and the atrophy following long-continued disuse. A good deal of evidence tends to show that in the case of persons living a long time after amputation of an arm or a leg, there is a diminution in size and a change in the structure of the nerve trunks and the nerve centres, thus mechanically thrown out of function. Bearing on the nature of this change, whether it is an atrophy from disuse or an active degeneration, we have the above mentioned observations of our author.

Amputation at the thigh was effected in six young Guinea-pigs; they made a perfect recovery and were then killed from seventeen to seventy-six days after the operation; and the nerves concerned, together with the associated portion of the spinal cords, were examined by means of Marchi's Osmic Method.

The usual signs of degeneration were found both in the nerve trunks and in the cord.

The changes were most noticeable in the ventral roots and cells of the ventral horn; here, it was the lateral group of cells on the same side, which was most affected, while in the horn on the side opposite to the lesion there was also indication of degenerative change, though in a far less degree.

In the animals which had lived from thirty-six to seventy-six days after operation, the dorsal roots, at their entrance into the cord, showed, on the same side, slight degeneration, which, however, could not be followed further into the dorsal horn.

On comparison, it was found that these appearances were confined to that region in the cord which was directly associated with the lost limb. Comparing, now, the conditions in man, the author examined eight spinal cords in individuals who had suffered amputation from three weeks to three years before their death.

In this material, the signs of degeneration so evident in the Guinea-pigs, were not present.

In comparing the two sets of results, it must be remembered that the Guinea-pigs were all of them young, and that these degenerative changes occur most easily in very young animals; that in the human material, the youngest individual was a boy of sixteen years, who had been amputated a year before, and whose case was complicated. Of course, the evidence would be more satisfactory if some of the Guinea-pigs had been allowed to live for a longer time, in order to determine the final outcome of the changes following the amputation; and, also, if the possible initial disturbance occurring in man could have been tested on more cords at periods from three to six weeks after amputation. If we may infer from these data the changes in the spinal cord in old amputations are probably due to an atrophy following disuse, it remains for the pathologists to determine whether or no this is a slow form of the same process which is designated as degeneration in Guinea-pigs.

"Studies on the Structure of the Chromatin in the Sympathetic Ganglion Cell."

Dr. F. Vas (Archiv. fur Mikroscopisches Anatomie, B. 40, H. 3, October 18, 1892).

When pathological changes are to be studied in a group of cells, their normal condition must be taken as the point of departure, and it naturally is to be asked whether this normal condition is a constant one.

Pathologists in general would be the first to admit that this question had not been answered with all the care that its importance demands. It is perfectly plain, that in the nervous system of man, the condition of the cells designated as normal depends upon the age of the individual, and the degree to which the cells had been